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SUMMARIES

THE MAIN RESULTS OF COMPILATION OF BASIC DATA OF SEAWATER POLLUTION, GEOMORPHOLOGICAL AND HYDRO-ENGINEERING PROBLEMS IN THE POTI-PORT AND ADJACENT REGIONS OF BLACK SEA COAST OF GEORGIA. *Sh.Gagoshidze, M.Lordkipanidze, E.Khatiashvili, I.Saghinadze.* "Energy". №4(76). 2015. Tbilisi. p. 4-16. engl. sum geo.engl.rus.

This article is a brief Review of activities of the Georgian partner of the ICME Project – “Integrated Coastal Monitoring of Environmental Problems in the Sea Region and the Ways of their Solution” made in the period 2013-2015. It presents main results of compilation of basic data of seawater pollution, geomorphological and hydro-engineering problems in the Poti-Port and Anaklia regions of Black Sea coast of Georgia and on the develop of appropriate mathematical models for solution these problems.

BUILDING A LABORATORY MODEL AND IMPLEMENTATION OF EXPERIMENTS TO FORECAST THE NATURE OF SILT TRAVEL IN THE RION RIVER ESTUARY. *P.Baljyan, A.Sarukhanyan, N.Hovumyan.* "Energy". №4(76). 2015. Tbilisi. p. 17-21. engl. sum geo.engl.rus.

This paper is intended for carrying out theoretical and experimental study silt and sediment propagation at of the Rion River mouth. For this reason a mathematical model was developed designed to predict accumulations of silts at the coastal zone and their distribution pattern. At the same time the problem was solved by river modeling. To this end in the hydraulic research laboratory an experimental facility has been built. On the basis of the results obtained due to this two different procedures a comparative analysis was made. The difference of the obtained data is within the acceptable range.

INFLUENCE OF INITIAL PARAMETERS ON THE OPTIMAL LOAD VALUE OF THE POWER PLANT. *I. Makharadze.* "Energy". №4(76). 2015. Tbilisi. p. 22-27. geo. sum geo.engl.rus.

Analysis of the influence of different parameters of the initial information on the value of the optimum installed capacity of a new power plant is reviewed. It is shown that this capacity is inverse to the self-resistance of the plant’s system joint. It is also shown that the plants and the consumers located inthe plant constructionregion react incompatibly on the value of the optimum installed capacity of a new power plant. Besides, the degree of such act is as high as generation/load of these units and depends on mutual resistance of the assembly.

DETERMINATION OF DESIGN PARAMETERS OF WIND AND SOLAR ENERGY MULTIPLYING POWER PLANTS. *V. Jamarjashvili, R. Pataraiia.* "Energy". №4(76). 2015. Tbilisi. p. 28-31. geo. sum geo.engl.rus.

Innvative idea based on synergetic use of wind and solar energy enables to use themultipliers that do not violate energy storage principle and at the same time provide their transformation with more than one coefficient allowing toreduce the cost of wind and solar equipment and gett regulated energy instead of unregulated one. Calculation method and the criteria satisfying the presented idea are given. Based on this idea practical example for the case of the river Magana-Enguri series system showing its efficiency is reviewed.

TWO VIRTUAL LABS – DETERMINE THE CALORIFIC VALUE OF FUEL AND FLUE GASES ANALYSIS. *K.Chkhikvadze, O.Kiguradze, N.Kezheredze.* "Energy". №4(76). 2015. Tbilisi. p. 32-35. geo. sum geo.engl.rus.

The principle of virtual laboratory tasks operation - the analysis of the combustion products and determination of the calorific value of fuel is discussed. Virtual task is created in Visual Basic. Principle operation of these tasks is based on the methods of operation of the gas analyzer of Orsa-Fisher and calorimetric determination of the calorific value of the fuel, respectively. They clearly show the stages of the processes occurring in the real works. The Created virtual labs will provide students with the essential help in the study of thermal processes during combustion.

METHOD TO DETERMINE BASIC PARAMETERS OF THE EXPECTED SLIDING SEGMENT OF LANDSLIDE HAZARDOUS AREAS. *A.Gioshvili.* "Energy". №4(76). 2015. Tbilisi. p. 36-44. geo. sum geo.engl.rus.

The method to determine the basic parameters of the expected sliding segment of landslide hazardous areas is elaborated. In order to resolve the set task the segment is split into n consisting parts. The so called reduced (average) μ_{reduce} factor value for each i ($i=1,2,\dots,n$) by integrating the respective μ_i friction factor and by the length of ℓ curve of the sliding surface was defined and R curve radiusvalue of the sliding surface was found by equalizing it with $\mu_{boundary}$ friction value correspondingto the water concentration boundary value in the soil participating inthe sliding surface.

It is mentioned that within the segment, at particular depth from the slope surface, the sliding surface will coincide with the formation dividing border in case of presence of the formation containing big amount of rocky rock or clay granules after the soil.

The equipment enabling to determine the boundary water concentration in the soil participating in sliding surface of the segment at which the sliding of the segment starts is described.

The work results can be used in landslide hazardous areas for the purposes to determine the basic parameters of the segments participating in the landslide body.

REGULATION OF MOUNTAIN RIVERS, PROTECTION OF DRY RAVINES, RIVER-THE BLACK SEA HYDRAULIC ENVIRONMENTAL EQUILIBRIUM AND HYDRAULIC-ENERGY PROBLEMS IN GEORGIA. *I.Mikashvili*. "Energy". №4(76). 2015. Tbilisi. p. 45-50. geo. sum geo.engl.rus.

For avoiding development of torrents in ravines, during heavy rains, it is reasonable to arrange forest terraces on the ravines, transversely by protective rubble gabions. During regulation of Mountain River flows priority should be granted to arrangement of optimal impoundment reservoirs cascade and rational use of river energy resources and agricultural land plots of the canyon. In order to protect heads of rivers with deficit of solid sediment, shore protection facilities, with sediment retention (facing the land) and waves stilling frontal constructions (facing the sea) should be arranged.

MONITORING AND DIAGNOSTIC OF SHRINKAGE AND CRACKING PROCESS IN CONCRETE DAMS USING HOLOGRAPHIC INTERFEROMETER METHOD. *G.Dalakishvili, A.Danelia, M.Sanikidze, K.Kalichav*. "Energy". №4(76). 2015. Tbilisi. p. 51-59. geo. sum geo.engl.rus.

There are reviewed experimental researches in hydroelectric construction, specifically such a long processes which are shrinkage and cracking. Research was conducted by indestructible method using holographic interferometer. This method allows opportunity to manufacture monitoring and diagnostics in concrete dams. There are given an overview of relevant literature and experimental data.

ANALYSIS REAL-FACTUAL CONDITION DEFORMED SECTION OF MAIN GAS PIPELINE. *I.Lomidze, T.Mrevlishvili*. "Energy". №4(76). 2015. Tbilisi. p. 60-66. geo. sum geo.engl.rus.

There is a technical state assessment of damaged, deformed sections of Georgian main gas pipelines using mathematical analysis. According to this mathematical analysis, further operation of gas pipelines would be possible only in case, if repair work is made. This issue is very important for people working in gas pipelines operation field, since mathematical analysis gives real picture, which plays significant role in continuous and safe operation of gas pipelines.

CONSTRUCTION PROBLEMS AND TECHNOLOGIES IN GEORGIA WITH THE ENERGY-EFFICIENT AND ENVIRONMENTALLY FRIENDLY CONSTRUCTION MATERIALS, USING THE „ECO-GENE RENEWABLE SEDIMENTARY” SHALE OF RIVER DURUJI. *R.Skhvitaridze, E.Shapakidze, I.Giorgadze, Sh.Verulava*. "Energy". №4(76). 2015. Tbilisi. p. 67-73. geo. sum geo.engl.rus.

In Georgia to reduce heating and cooling costs, it is necessary to use energy-efficient and comfort making building material like Keramzit (expanded clay). In River Duruji ravine there are 15mln. m³ „eco-gene renewable sedimentary” shale and it is threat for Kvareli city, to prevent it and in addition to give workplaces to local citizens and to develop economy it is necessary to take out this shale from ravine and transform to Keramzit. We admit this „eco-gene renewable sedimentary” shale as a basic raw material for effort sustainable development, because for it, there is possible to produce products with the total cost 1,5 billion USD (GDP).

NATURAL BUILDING STONE AND ARCHITECTURAL EXPRESSIVENESS. *G.Kipiani, T.Indashvili*. "Energy". №4(76). 2015. Tbilisi. p. 74-83. geo. sum geo.engl.rus.

The article deals with natural building materials, stone role in architectural expressiveness. Stone silent, when the surface is not observed, when people do not read the information it stored there. When they will look, read and understand what arising from events in, speak up about its structure, cheer you up texture and to suggest architectural forms. A group of authors have presented an interesting example of the Mtskheta Cross temple overlooking the church building and the stone, the structure created, consisting of dialogue. This really is the Artistic pattern, which indicates the talent of the architect.

MODERN METHODS OF INCREASING REPRESENTATION OF CLAY SOIL BASES OF BUILDINGS. *N.Bakhtadze, O.Giorgishvili, Y.Salukvadze, A.Tatanashvili*. "Energy". №4(76). 2015. Tbilisi. p. 84-87. geo. sum geo.engl.rus.

As practice it has shown the construction practice, we are the witnesses of many buildings deformation, the main reason of these deformations is the logging of base ground and most of them require the reinforcement of building base ground. There are various means of the base ground reinforcement; these methods have both positive and negative side. Thus we select out one of the modern method that reinforces

the building's foundation by pressing, those goal is to reinforce the base grounds i to avoid deformation of buildings.

TECHNOLOGICAL, TECHNICAL AND PHYSICO-MECHANIC PROPERTIES OF SULFUR CONCRETES AND SULFUR ASPHALT TO BE USED IN INFRASTRUCTURAL CONSTRUCTION WHEN LAYING PIPELINE SYSTEMS FOR ENERGY RESOURCES. V. Loladze, M. Lordkipanidze, I. Zubitashvili. "Energy". №4(76). 2015. Tbilisi. p. 88-97. geo. sum geo.engl.rus.

Technological, technical and physico-mechanic properties of sulfur concretes and sulfur asphalt to use them in the infrastructural construction when laying pipeline systems for the energy resources are elaborated.

Particular advantages of sulfur asphalt concrete mixture over the regular asphalt-concrete mixture reflected in reducing technological temperatures of production, transportation, laying and consolidation of combustible mixtures, increasing wear resistance of the road pavements, their corrosion resistance and reduction of their cost are provided.

Utilization of the suggested solutions has no analogue in the world.